

WHAT IS CLAIMED IS:

1. An image forming apparatus, comprising:

a pattern detecting device configured detect whether or not a pattern is constructed
5 with a lengthwise line of a single dot width on a basis of a pattern of respective multi-value
data of a target pixel and circumferential pixels adjacent thereto in a main scanning direction;
and

a printing device configured to print size-reduced printing dots of said lengthwise
line of the single dot width detected by said pattern detecting device.

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2. The image forming apparatus of claim 1, wherein said pattern detecting device
further detects whether or not the pattern is constructed with an edge of a lengthwise line of a
plural dot width on a basis of the pattern of the respective multi-value data of the target pixel
and the circumferential pixels adjacent thereto in the main scanning direction; and

15 said printing device further prints size-reduced printing dots of said lengthwise line
of the plural dot width detected by said pattern detecting device.

3. The image forming apparatus of claim 2, wherein said pattern detecting device
judges whether or not said constructed lengthwise line is of the single dot width or of a plural
20 dot width, when pixels neighboring right and left of the target pixel are white or black and the
target pixel is halftone or black.

4. The image forming apparatus of claim 2, wherein said printing device shortens a dot
width so as to bring neighboring dots into contact with each other when printing is done with
25 the size-reduced printing dot of the lengthwise line of the plural dot width.

5. The image forming apparatus of claim 3, wherein said printing device shortens a dot
width so as to bring neighboring dots into contact with each other when printing is done with
the size-reduced printing dot of the lengthwise line of the plural dot width.

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6. The image forming apparatus as defined in one of claims 1 through 4, wherein said
pattern detecting device further detects whether or not said lengthwise line is a white
lengthwise line of a single dot width or less than the single dot width, on a basis of the
patterns of the respective multi-value data of the target pixel and the circumferential pixels

adjacent thereto in the main scanning direction; and

said printing device performs the printing operation with further small printing dot of the white lengthwise line detected by said pattern detecting device.

5 7. The image forming apparatus as defined in one of claims 1 through 5, wherein said pattern detecting device is provided with plural pattern detecting sections for detecting different patterns; and

one of said plural pattern detecting sections to be operated can be selected.

10 8. The image forming apparatus as defined in one of claims 1 through 5, wherein said pattern detecting device and said printing device create code data including data representing whether or not the data coincide with plural patterns and density data of the target pixel; and the size of the printing dot is changed by converting the data obtained by decoding the code data to the light-emitting data.

15 9. The image forming apparatus as defined in one of claims 1 through 5, wherein said pattern detecting device and said printing device generate code data including data representing coincidence or non-coincidence with the plural patterns and density data of the target pixel;

20 the specified code data are generated in the case of coinciding with the specified pattern among the plural patterns; and

the data obtained by decoding the code data are converted to the light-emitting data and thereby the size of the printing dot is changed.

25 10. An image forming apparatus, comprising:

pattern detecting means for detecting whether or not a pattern is constructed with a lengthwise line of a single dot width on a basis of a pattern of respective multi-value data of a target pixel and circumferential pixels adjacent thereto in a main scanning direction; and

30 printing means for printing size-reduced printing dots of said lengthwise line of the single dot width detected by said pattern detecting means.

11. The image forming apparatus of claim 10, wherein said pattern detecting means further detects whether or not the pattern is constructed with the edge of said lengthwise line of the plural dot width on a basis of the pattern of the respective multi-value data of the target

pixel and the circumferential pixels adjacent thereto in the main scanning direction; and
said printing means further prints size-reduced printing dots of said lengthwise line
of the plural dot width detected by said pattern detecting means.

12. The image forming apparatus of claim 11, wherein said pattern detecting means
judges whether or not said constructed lengthwise line is of the single dot width or of a plural
dot width, when pixels neighboring right and left of the target pixel are white or black and the
target pixel is halftone or black.

13. The image forming apparatus of claim 11, wherein said printing means shortens
a dot width so as to bring neighboring dots into contact with each other when printing is done
with the size-reduced printing dot of the lengthwise line of the plural dot width.

14. The image forming apparatus of claim 12, wherein said printing means shortens a
dot width so as to bring neighboring dots into contact with each other when printing is done
with the size-reduced printing dot of the lengthwise line of the plural dot width.

15. The image forming apparatus of claim 10, wherein said pattern detecting means
further detects whether or not said lengthwise line is a white lengthwise line of a single dot
width or less than single dot width, on a basis of the patterns of the respective multi-value
data of the target pixel and the circumferential pixels adjacent thereto in the main scanning
direction; and

said printing means performs the printing operation with further small printing dot of
the white lengthwise line detected by said pattern detecting means.

16. The image forming apparatus of claim 10, wherein said pattern detecting means is
provided with plural pattern detecting sections for detecting different patterns; and
one of said plural pattern detecting sections to be operated can be selected.

17. The image forming apparatus of claim 10, wherein said pattern detecting means
and said printing means create code data including data representing whether or not the data
coincide with plural patterns and density data of the target pixel; and

the size of the printing dot is changed by converting the data obtained by decoding the
code data to the light-emitting data.

18. The image forming apparatus of claim 10, wherein said pattern detecting means and said printing means generate code data including data representing coincidence or non-coincidence with the plural patterns and density data of the target pixel;

5 the specified code data are generated in the case of coinciding with the specified pattern among the plural patterns; and

the data obtained by decoding the code data are converted to the light-emitting data and thereby the size of the printing dot is changed.

10 19. A method of forming an image, comprising the steps of:

detecting whether or not a pattern is constructed with a lengthwise line of a single dot width on a basis of a pattern of respective multi-value data of a target pixel and circumferential pixels adjacent thereto in a main scanning direction, by use of a pattern detecting device; and

15 printing size-reduced printing dots of said lengthwise line of the single dot width detected by said pattern detecting device, by use of a printing device.

20 20. The method of claim 19, further comprising the steps of:

further detecting whether or not the pattern is constructed with an edge of a lengthwise line of a plural dot width on a basis of a pattern of respective multi-value data of a target pixel and circumferential pixels adjacent thereto in a main scanning direction, by use of said pattern detecting device; and

further printing size-reduced printing dots of said lengthwise line of the plural dot width detected by said pattern detecting device, by use of said printing device.

25 21. The method of claim 20, further comprising the step of:

judging whether or not said constructed lengthwise line is of the single dot width or of a plural dot width, when pixels neighboring right and left of the target pixel are white or black and the target pixel is halftone or black, by use of said pattern detecting device.

30 22. The method of claim 20, further comprising the step of:

shortening the dot width so as to bring neighboring dots into contact with each other when printing is done with the size-reduced printing dot of the lengthwise line of the plural dot width, by use of said printing device.

23. The method of claim 21, further comprising the step of:

shortening the dot width so as to bring neighboring dots into contact with each other when printing is done with the size-reduced printing dot of the lengthwise line of the plural dot width, by use of said printing device.

24. The method of claim 19, further comprising the steps of:

further detecting whether or not said lengthwise line is a white lengthwise line of a single dot width or less than the single dot width, on a basis of the patterns of the respective multi-value data of the target pixel and the circumferential pixels adjacent thereto in the main scanning direction, by use of said pattern detecting device; and

performing the printing operation with further small printing dot of the white lengthwise line detected by said pattern detecting device, by use of said printing device.

25. The method of claim 19, further comprising the steps of:

providing plural pattern detecting sections for detecting different patterns, by use of said pattern detecting device; and

selecting one of said plural pattern detecting sections to be operated.

26. The method of claim 19, further comprising the steps of:

creating code data including data representing whether or not the data coincide with plural patterns and density data of the target pixel, by use of said pattern detecting device and said printing device; and

changing the size of the printing dot by converting the data obtained by decoding the code data to the light-emitting data.

27. The method of claim 19, further comprising the steps of:

generating code data including data representing coincidence or non-coincidence with the plural patterns and density data of the target pixel, by use of said pattern detecting device and said printing device;

generating the specified code data in the case of coinciding with the specified pattern among the plural patterns; and

converting the data obtained by decoding the code data to the light-emitting data and thereby changing the size of the printing dot.

28. A computer program product comprising a computer storage medium having a computer program code mechanism embedded in the computer storage medium configured to perform the steps recited in any one of Claims 19-27.